A SUMMARY OF CATTAIL-SPRAYING OPERATIONS IN NORTH DAKOTA: 1991-98

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Introduction

In 1989, the USDA began experimenting with cattail management to reduce sunflower damage caused by blackbirds. Dense stands of cattail, which often hold large numbers of blackbirds in late summer and early fall, were thinned with glyphosate herbicide (Rodeo®). Based on promising results from initial research done in northcentral North Dakota, a statewide cattail management program was started by the USDA in 1991.

Methods

The USDA offers glyphosate treatments free to owners with cattail-dominated wetlands larger than 15 acres (Phone #: 701-250-4405). Fixed-wing aircraft apply the glyphosate in August or September. The following year, the treated wetlands display a linear pattern consisting of 15-m strips of open water that alternate with bands of living vegetation 6-m wide. Treatments can last >4 years when water levels stay consistently ≥12 inches.

Wildlife Services maintains a database that includes the acres of wetlands treated with glyphosate, the wetland location, and the landowner's name. For this poster, we summarize the North Dakota database from 1991 through 1998. The total acres of treated wetlands were estimated by dividing the number of sprayed acres by 0.70, which represents an average spray coverage of 70% per wetland.

Results

Since 1991, North Dakota Wildlife Services has used glyphosate on >1,000 cattail-dominated wetlands comprising nearly 36,000 acres (Fig. 1). Thirty of North Dakota's 53 counties have received at least one application. The average size of wetlands treated by Wildlife Services from 1991-98 was 31 (± 7.8) acres (Table 1). In 1998, most of the spraying was done in Barnes County (1,923 acres). Barnes, LaMoure, and Ramsey Counties have each had >4,000 acres of semipermanent wetlands treated with Rodeo® (Table 2), or approximately 17% of the semipermanent wetland area present in these counties. Sunflower production in the counties was highly correlated with the acres of treated wetlands ($r_S = 0.83$, $P < 0.0001$). At an application cost of $61/acre, Wildlife Services has expended >$1.6 million to reduce cattail growth in semipermanent wetlands of North Dakota.

Discussion

Wildlife Services is seeking to reduce the costs of application from $61/acre. Experiments designed to measure the efficacy of lower rates of glyphosate began in 1998. Work will start in July 1999 on the effectiveness of lower dilution rates and earlier dates of application. Additionally, studies will begin on the beneficial effects of treating small-sized wetlands <15 acres. We will continue gathering data for a mathematical model that will estimate the overall efficacy of cattail management for reducing damage to sunflower.

In the long term, sunflower producers may see less local damage because the cumulative effects of cattail reduction should inhibit the formation of dense flocks of blackbirds that characteristically aggregate in wetlands overgrown with cattail.

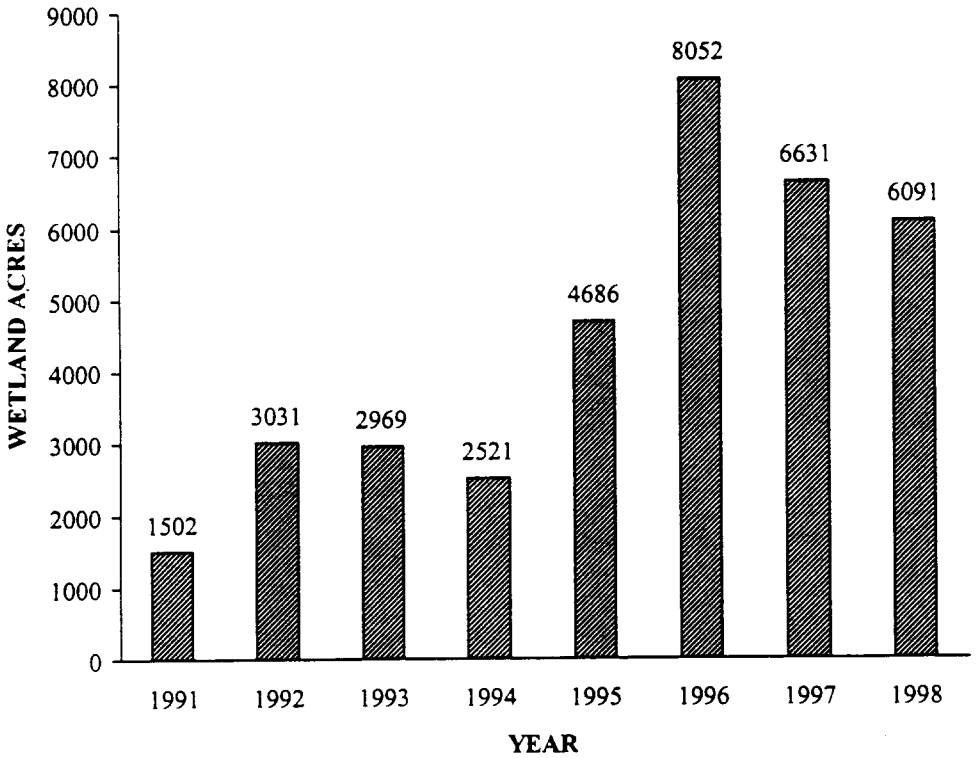

Figure 1. Acres of wetlands treated in North Dakota with glyphosate from 1991-98 by USDA/Wildlife Services.

Table 1. Summary data from USDA/Wildlife Service's cattail management program in North Dakota from 1991 through 1998

Year	Mean size (acres) of treated wetlands	Number of wetlands sprayed
1991	19	78
1992	26	118
1993	37	80
1994	27	94
1995	27	176
1996	34	240
1997	44	161
1998	35	183
Mean / Totals	31	1,130

Table 2. Acres of wetlands[a] treated with glyphosate (Rodeo®) from 1991 through 1998 in North Dakota

County	Year[b] 1991	1992	1993	1994	1995	1996	1997	1998	Total	Spray Rank[c]	Sunfl. Rank[d]
Barnes	29	287	337	—	—	850	1,366	1,923	4,791	1	1
Benson	—	119	—	—	414	67	—	121	721	13	7
Burleigh	—	—	—	—	—	203	—	240	443	18	25
Cass	—	74	—	—	—	—	—	137	211	22	13
Cavalier	—	—	—	—	—	1,249	246	74	1,568	8	16
Dickey	—	—	606	—	1,119	101	133	98	2,058	6	5
Eddy	92	—	—	—	—	331	76	—	500	17	12
Foster	501	63	—	—	304	57	182	237	1,344	11	9
Griggs	502	800	—	—	—	109	—	96	1,507	10	11
Kidder	—	—	—	59	—	80	—	—	139	25	27
La Moure	—	572	576	—	294	1,963	251	534	4,190	2	3
Logan	—	—	—	—	43	—	19	—	61	27	23
McHenry	—	—	15	—	—	—	436	156	607	15	10
McKenzie	—	—	—	—	—	250	—	—	250	21	29
McLean	—	—	—	—	—	—	130	—	130	26	28
Nelson	89	896	—	1,009	303	163	717	437	3,613	4	6
Pierce	—	—	—	—	43	63	—	411	517	16	15
Ramsey	—	105	—	—	1,143	456	1,733	682	4,118	3	8
Ransom	—	—	83	—	—	754	61	—	899	12	14
Richland	—	—	286	—	—	—	—	—	286	20	24
Rolette	—	—	—	—	—	—	140	44	184	23	26
Sargent	—	—	838	627	—	16	43	—	1,524	9	20
Sheridan	—	—	—	—	—	—	53	—	53	28	18
Steele	—	—	—	—	—	50	—	—	50	29	19
Stutsman	220	115	227	—	577	851	243	571	2,805	5	2
Towner	—	—	—	—	—	—	31	118	149	24	22
Walsh	—	—	—	—	151	106	307	81	645	14	17
Ward	—	—	—	—	—	—	313	—	313	19	21
Wells	68	—	—	827	294	324	152	131	1,797	7	4
Williams	—	—	—	—	—	9	—	—	9	30	30
Total	1,502	3,031	2,969	2,521	4,686	8,052	6,631	6,091	35,483		

[a]Calculated by dividing acres of treated cattail by 0.70, the average spray coverage.

[b]A '—' within years means that no treatments were applied.

[c]Counties ranked according to acres of wetlands treated from 1991 through 1998.

[d]Counties ranked according to sunflower production in 1997.